



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/916,472 | 07/30/2001 | Hiroaki Hoshi | 35.C15638 | 8751 |

5514 7590 10/21/2003

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

| |
|----------|
| EXAMINER |
|----------|

LUI, TIANH X

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2878

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/916,472

Applicant(s)

HOSHI ET AL.

Examiner

Thanh X. Luu

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(e). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s): _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 28, 2003 has been entered.

Claims 1-8, 11 and 12 are currently pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-8, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear if "an optical image of an object" is the same optical image that is synthesized.

Regarding claims 2-4, "the predetermined frequency difference" lacks proper antecedent basis.

The other claims are indefinite by virtue of their dependency on an indefinite claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 11 and 12, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Miyagawa et al. (U.S. Patent 5,555,087).

Regarding claims 1-5, 11 and 12, Miyagawa et al. disclose (see Figure 1) an image pickup apparatus, comprising: an image pickup unit having an array of a plurality of photodetection elements (30); a light-emitting element unit (20, 21, 22, 37, 32) for emitting reference light (S2) having a predetermined frequency difference with respect to a frequency of light incident (a5/a6) on the image pickup unit; and a wave synthesizer (42) for synthesizing the incident light and the reference light from the light-emitting unit and guiding the synthesized light to the image pickup unit. Miyagawa et al. further disclose (see Figure 1) an electric filter (34) adapted to extract a desired frequency band from outputs from the photodetection elements and controlling the frequency (with 32) of the reference light (s1) by using an output from the electric filter. Miyagawa et al. also disclose (see Figure 1) an optical system (44) for focusing light on the image pickup unit and a signal processing circuit (31) for processing an output signal from the image pickup unit. Since the frequency difference depends of the optical path lengths, Miyagawa et al. disclose the frequency difference is modulated according to a predetermined rule. Further since light from the light emitting unit reaches the

photodetection elements, the light emitting element unit is provided in common as claimed. Miyagawa et al. further disclose (see column 6, line 64) the frequency difference is zero (no interference) or constant. Further since the image pickup unit can be split into any desired units, each unit having a plurality of photodetection elements, the apparatus of Miyagawa et al. has more than two of the pickup units.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa et al. in view of Horiuchi et al. (U.S. Patent 5,463,461).

Regarding claim 6, Miyagawa et al. disclose the claimed invention as set forth above. Miyagawa et al. do not specifically disclose a semiconductor laser. Horiuchi et al. teach (see column 1, line 16-17) the light-emitting unit including a semiconductor laser. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a semiconductor laser in the apparatus of Miyagawa et al. in view of Horiuchi et al. to obtain a more compact and efficient light emitting device.

8. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyagawa et al.

Regarding claims 7 and 8, Miyagawa et al. disclose the claimed invention as set forth above. Miyagawa et al. do not specifically disclose a microlens array and a light waveguide provided for each photodetection element. However, microlens arrays and waveguides provided for photodetection elements are well known. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a microlens array or waveguides as claimed in the apparatus of Miyagawa et al. to reduce light loss and improve detection.

Response to Arguments

9. Applicant's arguments filed July 28, 2003 have been fully considered but they are not persuasive.

Applicant asserts that the prior art does not disclose a feedback apparatus as claimed. Examiner disagrees. Miyagawa et al. clearly shows (see Figure 1) a feedback apparatus (31, 32, 33, 36) as claimed.

Thus, as set forth above, this rejection is proper.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta, can be reached on (703) 308-4852. The fax phone number for the organization where the application or proceeding is assigned is (703) 872-9306.


Application/Control Number: 09/916,472

Page 6

Art Unit: 2878

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
October 17, 2003



Thanh X. Luu
Patent Examiner